Citation:

Oken E, Taveras EM, Popoola FA, Rich-Edwards JW, Gillman MW. Television, walking, and diet: associations with postpartum weight retention. Am J Prev Med. 2007 Apr;32(4):305-11.

PubMed ID: 17383561

Study Design:

Prospective cohort study

Class:

B - Click here for explanation of classification scheme.

Research Design and Implementation Rating:

POSITIVE: See Research Design and Implementation Criteria Checklist below.

Research Purpose:

To examine the association of television viewing, physical activity (walking in particular) and dietary factors including intake of fiber, total fat, and trans fat in the early postpartum period with substantial weight retention at 1 year postpartum.

Inclusion Criteria:

Pregnant women attending first prenatal visit in one of eight urban and suburban multi-specialty group medical practices in eastern Massachusetts during 1999-2003 who were fluent in English, had gestational age < 22 weeks, and were carrying only one fetus were included.

Exclusion Criteria:

Subjects were excluded if they became pregnant in the first year postpartum, were missing information on height, race/ethnicity, parity, education, smoking, physical activity,marital or work status and who reported unrealistic amounts of physical activity.

Description of Study Protocol:

Recruitment

Subjects recruited during first prenatal visit to one of eight obstetrical offices in eastern Massachusetts.

Design

Prospective study of reported weight and behaviors pre-pregnancy and at 6 months and 12 months post-partum.

Blinding used (not applicable)

Intervention (not applicable)

Statistical Analysis (SAS version 8.2, SAS Institute, Cary, NC)

t tests, Wilcoxon rank sum,chi square, multivariate logistic regression, odds ratio assessment

Data Collection Summary:

Timing of Measurements

Subjects self reported pre-pregnancy height and weight and were asked about age, race/ethnicity, parity, education, household income at the first prenatal visit.

Subjects self reported activity, exercise, food intake, smoking, employment and depression at 6 months post-partum.

Subjects self reported weight at 12 months post-partum via a mail in questionnaire.

Dependent Variables

- Relation of time spent watching TV on weight retention
- Relation of time spent walking on weight retention
- Relation of diet on weight retention

Independent Variables

Age, race/ethnicity, parity, education, household income, pre-pregnancy body mass index, pregnancy weight gain, smoking, employment, and depression

Control Variables (not applicable)

Description of Actual Data Sample:

Initial N: 65% of eligible women were recruited for the study; of these, 2128 women participants gave birth; of these, 1585 enrolled beyond 6 month post-partum; of these, 1092 provided all necessary information (pre-pregnancy, 6 month, 12 month); of these, 102 became pregnant in the first year post-partum, 72 had missing information about height, race,parity, education, smoking, physical activity, marital or work status and 6 reported implausible amounts of activity.

Attrition (final N): 902 (57% of 1585)

Age, Ethnicity, Anthropometrics and other demographics: actual participants were compared to 1585 potential participant pool and found to be similar in pre-pregnancy weight, gestational weight gain, walking time, trans fat intake and television viewing time.

See graphic representation in results section.

Location: eastern Massachusetts, USA

Summary of Results:

Key Findings

- Mothers who retained at least 5 kg were younger, heavier before pregnancy, more likely to be non-white, unmarried, primiparous and have lower income and to have gained an excessive amount of weight during pregnancy.
- For each daily hour of television viewing, the adjusted odds ratio for retaining at least 5 kg was 1.24

(95% confidence interval 1.06-1.46).

- Trans fat intake increased risk of retaining at least 5 kg at an odds ratio of 1.33 (95% CI = 1.09).
- Odds ratio of retaining at least 5 kg decreased to 0.66 (95% CI: 0.46-0.94) for each hour of daily walking.
- Women who watched less than 2 hours of television, walked at least 30 minutes per day and consumed trans fat below the median had an odds ratio of 0.23 (95% CI: 0.08-0.66) of retaining at least 5 kg.

Table of demographic characteristics and associations with weight retention at 1 year postpartum (Standard Deviation indicated in parentheses).

	< 5 kg (n=791, 88%)	≥ 5 kg (n=111, 12%)	p value
Pre-pregnancy age (years)	33.2 (4.4)	31.5 (6.2)	0.007
Pre-pregnancy BMI (kg/m^2)	24.2 (4.8)	25.6 (4.8)	0.003
White	81	63	*
Black	6	19	*
Hispanic	5	6	*
Other ethnicity	7	12	*
Some college or less	21	39	*
College graduate	39	44	*
Graduate degree	40	17	*
Income unknown	4	11	*
≤ $40,000	9	15	*
$40,000-$70,000	20	24	*
>$70,000	68	50	*
0 previous birth	46	58	**
≥ 1 previous birth	54	42	**
Married/cohabitation	97	85	*
Single	3	15	*
Excessive gestational gain	46	76	*
Adequate gestational gain	38	21	*
Inadequate gestational gain	15	4	*
Television (hours/day)	1.6 (1.3)	2.1 (1.5)	<0.001
Television < 2 hours/day	68	54	0.003
Walking (hours/day)	0.74 (0.66)	0.73 (0.69)	0.82
Walking > 30 minutes/day	57	52	0.36
Moderate activity (hours/day)	0.16 (0.29)	0.23 (0.48)	0.49
any moderate activity	39	41	0.75
Vigorous activity (hours/day)	0.16 (0.29)	0.19 (0.41)	0.61
any vigorous activity	36	31	0.31

Trans fat (% of energy)	1.1 (0.5)	1.3 (0.6)	<0.001
Trans fat < median	52	32	<0.001
Total fat (% of energy)	30.3 (7.0)	33.5 (7.3)	<0.001
Fiber (grams/day)	8.6 (3.0)	7.4 (2.8)	<0.001
Employed at 6 month post-partum	69	70	**
Not employed	31	30	**
Smoking	5	4	**
Not Smoking	95	96	**
Depression score < 13	93	87	**
Depression score 13-14	3	6	**
Depression score ≥ 15	4	6	**
Formula, no breastfeeding	10	10	**
Weaned breast to formula	36	44	**
Mixed formula and breast	27	23	**
Exclusive breastfeeding	27	23	**

***p < 0.001 for Race, Education, Household income, marital status, and gestational weight gain; **p = 0.02 for parity; 0.51 for smoking, 0.09 for depression scale and 0.38 for breastfeeding status**

Author Conclusion:

Television viewing and trans fat intake in the early postpartum period were directly associated and walking inversely associated, with substantial weight retention at 1 year postpartum and the effects were additive. Interventions to modify these behaviors may help reduce excess postpartum weight retention and to prevent obesity in women.

Reviewer Comments:

Strength: large study population; validity of self reported data verified

Weakness: significantly white, educated and affluent study population

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Research Design and Implementation Criteria Checklist: Primary Research

Relevance Questions

1.	Would implementing the studied intervention or procedure (if found successful) result in improved outcomes for the patients/clients/population group? (Not Applicable for some epidemiological studies)	Yes
2.	Did the authors study an outcome (dependent variable) or topic that the patients/clients/population group would care about?	Yes

3.	Is the focus of the intervention or procedure (independent variable) or topic of study a common issue of concern to nutrition or dietetics practice?	Yes
4.	Is the intervention or procedure feasible? (NA for some epidemiological studies)	N/A

Validity Questions

1.	**Was the research question clearly stated?**	Yes
1.1.	Was (were) the specific intervention(s) or procedure(s) [independent variable(s)] identified?	Yes
1.2.	Was (were) the outcome(s) [dependent variable(s)] clearly indicated?	Yes
1.3.	Were the target population and setting specified?	Yes
2.	**Was the selection of study subjects/patients free from bias?**	Yes
2.1.	Were inclusion/exclusion criteria specified (e.g., risk, point in disease progression, diagnostic or prognosis criteria), and with sufficient detail and without omitting criteria critical to the study?	Yes
2.2.	Were criteria applied equally to all study groups?	Yes
2.3.	Were health, demographics, and other characteristics of subjects described?	Yes
2.4.	Were the subjects/patients a representative sample of the relevant population?	???
3.	**Were study groups comparable?**	Yes
3.1.	Was the method of assigning subjects/patients to groups described and unbiased? (Method of randomization identified if RCT)	Yes
3.2.	Were distribution of disease status, prognostic factors, and other factors (e.g., demographics) similar across study groups at baseline?	Yes
3.3.	Were concurrent controls used? (Concurrent preferred over historical controls.)	N/A
3.4.	If cohort study or cross-sectional study, were groups comparable on important confounding factors and/or were preexisting differences accounted for by using appropriate adjustments in statistical analysis?	Yes
3.5.	If case control or cross-sectional study, were potential confounding factors comparable for cases and controls? (If case series or trial with subjects serving as own control, this criterion is not applicable. Criterion may not be applicable in some cross-sectional studies.)	Yes
3.6.	If diagnostic test, was there an independent blind comparison with an appropriate reference standard (e.g., "gold standard")?	N/A
4.	**Was method of handling withdrawals described?**	Yes
4.1.	Were follow-up methods described and the same for all groups?	Yes

4.2.	Was the number, characteristics of withdrawals (i.e., dropouts, lost to follow up, attrition rate) and/or response rate (cross-sectional studies) described for each group? (Follow up goal for a strong study is 80%.)	Yes
4.3.	Were all enrolled subjects/patients (in the original sample) accounted for?	Yes
4.4.	Were reasons for withdrawals similar across groups?	Yes
4.5.	If diagnostic test, was decision to perform reference test not dependent on results of test under study?	N/A
5.	**Was blinding used to prevent introduction of bias?**	No
5.1.	In intervention study, were subjects, clinicians/practitioners, and investigators blinded to treatment group, as appropriate?	N/A
5.2.	Were data collectors blinded for outcomes assessment? (If outcome is measured using an objective test, such as a lab value, this criterion is assumed to be met.)	No
5.3.	In cohort study or cross-sectional study, were measurements of outcomes and risk factors blinded?	No
5.4.	In case control study, was case definition explicit and case ascertainment not influenced by exposure status?	N/A
5.5.	In diagnostic study, were test results blinded to patient history and other test results?	N/A
6.	**Were intervention/therapeutic regimens/exposure factor or procedure and any comparison(s) described in detail? Were interveningfactors described?**	Yes
6.1.	In RCT or other intervention trial, were protocols described for all regimens studied?	N/A
6.2.	In observational study, were interventions, study settings, and clinicians/provider described?	Yes
6.3.	Was the intensity and duration of the intervention or exposure factor sufficient to produce a meaningful effect?	Yes
6.4.	Was the amount of exposure and, if relevant, subject/patient compliance measured?	Yes
6.5.	Were co-interventions (e.g., ancillary treatments, other therapies) described?	No
6.6.	Were extra or unplanned treatments described?	No
6.7.	Was the information for 6.4, 6.5, and 6.6 assessed the same way for all groups?	Yes
6.8.	In diagnostic study, were details of test administration and replication sufficient?	N/A
7.	**Were outcomes clearly defined and the measurements valid and reliable?**	Yes
7.1.	Were primary and secondary endpoints described and relevant to the question?	Yes
7.2.	Were nutrition measures appropriate to question and outcomes of concern?	Yes

7.3.	Was the period of follow-up long enough for important outcome(s) to occur?	Yes
7.4.	Were the observations and measurements based on standard, valid, and reliable data collection instruments/tests/procedures?	Yes
7.5.	Was the measurement of effect at an appropriate level of precision?	Yes
7.6.	Were other factors accounted for (measured) that could affect outcomes?	Yes
7.7.	Were the measurements conducted consistently across groups?	Yes
8.	**Was the statistical analysis appropriate for the study design and type of outcome indicators?**	Yes
8.1.	Were statistical analyses adequately described and the results reported appropriately?	Yes
8.2.	Were correct statistical tests used and assumptions of test not violated?	Yes
8.3.	Were statistics reported with levels of significance and/or confidence intervals?	Yes
8.4.	Was "intent to treat" analysis of outcomes done (and as appropriate, was there an analysis of outcomes for those maximally exposed or a dose-response analysis)?	Yes
8.5.	Were adequate adjustments made for effects of confounding factors that might have affected the outcomes (e.g., multivariate analyses)?	Yes
8.6.	Was clinical significance as well as statistical significance reported?	Yes
8.7.	If negative findings, was a power calculation reported to address type 2 error?	No
9.	**Are conclusions supported by results with biases and limitations taken into consideration?**	Yes
9.1.	Is there a discussion of findings?	Yes
9.2.	Are biases and study limitations identified and discussed?	Yes
10.	**Is bias due to study's funding or sponsorship unlikely?**	Yes
10.1.	Were sources of funding and investigators' affiliations described?	Yes
10.2.	Was the study free from apparent conflict of interest?	Yes